



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference NO 7257/WO	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/EP2004/002490	International filing date (day/month/year) 11.03.2004	Priority date (day/month/year) 24.03.2003	
International Patent Classification (IPC) or national classification and IPC A23L1/00, A23G3/00, A23G1/00			
Applicant NESTEC S.A. et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 3 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 21.10.2004		Date of completion of this report 20.01.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80293 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Rinaldi, F Telephone No. +49 89 2399-7360 	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/002490

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-14 as originally filed

Claims, Numbers

1-34 received on 30.10.2004 with letter of 28.10.2004

Drawings, Sheets

1/2-2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
 4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded." | |

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/002490

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-34
	No: Claims	
Inventive step (IS)	Yes: Claims	1-34
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-34
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item I

Basis of the report

- 1 The amendments fulfill the requirements of Art.34(2)(b) PCT. The amendments are based on p.4 I.12-13 as filed.

Re Item V

Reasoned statement under Art.35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1 The following documents are referred to in this communication:
D1 : US 2001/024678 A1 (SCOTT ROBERT ET AL) 27 September 2001 (2001-09-27)
D2 : WO 02/30213 A (NESTLE SA ; ONG MEI HORNG (GB); JONES ADRIENNE SARAH (GB); SOLDANI CRI) 18 April 2002 (2002-04-18)
D3 : MANUFACTURING CONFECTIONER, vol. 82, no. 5, 2002, pages 65-72, XP008033085 HERSHEY, USA
D4 : WO 01/91721 A (STALEY MFG CO A E) 6 December 2001 (2001-12-06)

Novelty

- 2 The subject-matter of claims 1-34 fulfills the requirements of Art.33(2) PCT. None of the documents cited in the ISR discloses a food product comprising a gelled shell and a liquid core, wherein the shell is made of 60-90% kappa carrageenan and 10-40% iota carrageenan based on the sum of the weights of kappa and iota carragenan. For instance, D1 discloses on §§29-31 capsules filled with fish oil containing kappa carrageenan which implicitly contains 5% of iota carrageenan. Accordingly, no process for producing said food products is available in the state of the art.

Inventive step

- 3 The subject-matter of the present application meets the requirements of Art.33(3) PCT.
 - 3.1 D2 is regarded as being the closest prior art to the subject-matter presently claimed: it discloses a gelled confectionary food product containing a fluid core (see examples). Said compositions can contain among other gums carrageenan. However, D2 fails to disclose definite combinations of iota carrageenan and kappa

carrageenan.

- 3.2 In D3 gelatin alternatives in gummi confections are discussed. Several gums are discussed, but compositions comprising blends of kappa carrageenan, the remainder being iota carrageenan are favoured. However, D3 is silent on filled products. On p.70, left column, l.2-5 D3 mentions that samples with lowest level of kappa carrageenan (runs 6 and 11 in Figure 3 with about 45% iota carrageenan) are not significantly different from gelatin. This is somehow confirmed by the comparison of Fig.6 and Fig.7 on p.70.
- 3.3 Similarly, D4 (p.1 l.7-14; p.4 l.12-18) teaches that blends containing of 50% kappa carrageenan and 50% iota carrageenan are useful in replacing gelatin when soft gel films or capsules are manufactured. This document does not address specific texture issues connected with confectionary products.
- 3.4 The objective problem to be solved is considered to be provision of a material replacing gelatin in a food product with a fluid core having the required texture and transparency and being quick setting.
- 3.5 The subject-matter of present claims 1-34 is considered to be inventive in view of the combination of D2 and D3. Having regard to the fact, that no jelly shells with a fluid core are mentioned in D3 and that this document rather teaches to use some 45% iota carrageenan, the one skilled in the art would not be prompted to provide the claimed solution (ratio of kappa and iota carrageenan) to solve the technical problem of replacing gelatin. Several unexpected advantages derive from the presence of 60-90% kappa carrageenan in the shell, among others facilitated manufacturing process, well centred filling, pleasant texture due to brittleness (see p.6 l.4-p.7 l.15).
- 3.6 The subject-matter of present claims 1-34 is considered to be inventive in view of the combination of D2 and D4. There is no indication in D4 to provide 60-90% of kappa-carrageenan in the shell. Similarly, the above-mentioned advantages (see item V 3.5) of said claimed range could not be expected.

CLAIMS:

1. A food product comprising a gelled water-based shell and a liquid centre characterised in that the water-based shell contains a mixture of kappa carrageenan and iota carrageenan in an amount sufficient to provide a gel texture, the relative proportions of kappa carrageenan and iota carrageenan being 60 to 90% by weight kappa carrageenan and 10 to 40% by weight iota carrageenan based on the sum of the weights of kappa and iota carrageenan.
2. A food product as claimed in claim 1 wherein the shell contains, on a dry substance basis, 1.5% to 5% by weight of the mixture of kappa and iota carrageenans.
3. A food product as claimed in claim 1 wherein the shell contains, on a dry substance basis, 1.7% to 4% by weight of the mixture of kappa and iota carrageenans.
4. A food product as claimed in claim 1 wherein the shell contains, on a dry substance basis, 2% to 2.5% by weight of the mixture of kappa and iota carrageenans.
5. A food product as claimed in any of claims 1 to 4 wherein the mixture of kappa and iota carrageenans contains 65 to 90% kappa and 10 to 35% iota based on the total weight of kappa and iota.
6. A food product as claimed in any of claims 1 to 4 wherein the mixture of kappa and iota carrageenans contains 70 to 85% kappa and 15 to 30% iota based on the total weight of kappa and iota.
- 7.. A food product as claimed in any of claims 1 to 6 wherein the shell is formed of a composition comprising in addition to the blend of kappa and iota carrageenan, water and one or more sweeteners.
8. A food product as claimed in claim 7 wherein the sweetener is a sugar, a sugar syrup, corn syrup or a sugar substitute or an artificial sweetener.
9. A food product as claimed in claim 7 or 8 wherein the sweetener is

present in an amount of 45 to 88% of the shell.

10. A food product as claimed in claim 7 or 8 wherein the sweetener is present in an amount of 72 to 83% of the shell.

11. A food product as claimed in any of claims 1 to 10 wherein the composition forming the shell also contains aci~ acidity regulator and/or co1ourant.

12. A food product as claimed in any of claims 1 to 11 wherein the solids content of the shell is 50 to 90% by weight.

13. A food product as claimed in any of claims 1 to 11 wherein the solids content of the shell is 60 to 85% by weight.

14. A food product as claimed in any of claims 1 to 11 wherein the solids content of the shell is 75 to 85% by weight.

15. A food product as claimed in any of claims 1 to 14 wherein a 3.5mm thick slice of the shell has an optical density of 0.2 or less.

16. A food product as claimed in any of claims 1 to 14 where a 3.5mm thick slice of the shell has an optical density of 0.1 or less.

17. A food product as claimed in any of claims 1 to 16 wherein the liquid centre is a fat based composition.

18. A food product as claimed in claim 17 wherein the liquid centre is a flavoured oil or chocolate.

19. A food product as claimed in any of claims 1 to 18 wherein the liquid centre contains water and sweetener.

20. A food product as claimed in claim 19 wherein the sweetener is a sugar, a sugar syrup, com syrup or a sugar substitute or an artificial sweetener.

21. A food product as claimed in claim 20 wherein the liquid centre contains colour, flavour, acid and/or one or more functional ingredients.

22. A food product as claimed in claim 21 wherein the liquid centre contains at least one of minerals, vitamins and herbs.

23. A food product as claimed in any of claims 19 to 22 wherein the water

content of the liquid centre is from 10 to 30% by weight and the sweetener content is

from 70 to 90% by weight.

24. A food product as claimed in any of claims 1 to 23 wherein the viscosity of the liquid centre is in the range from 0.01 to 10,000 Pas.

25. A food product as claimed in any of claims 1 to 24 wherein the shell has a thickness of 1mm to 10mm.

26. A food product as claimed in any of claims 1 to 24 wherein the shell has a thickness of 2mm to 7.5mm

27. A food product as claimed in any of claims 1 to 24 wherein the shell has a thickness of 2.5 to 5mm.

28. A food product as claimed in any of claims 1 to 27 wherein the liquid filling comprises 5 to 90% of the product.(

29. A food product as claimed in any of claims 1 to 27 wherein the liquid filling comprises 7 to 30% of the product.

30. A food product as claimed in any of claims 1 to 27 wherein the liquid filling comprises 10 to 25% of the product.

31. A food product as claimed in any of claims 1 to 30 which is gelatin free.

32. A process for the manufacture of a food product as claimed in any of claims 1 to 31, which comprises introducing the water-based shell composition in liquid form and the liquid centre into a mould so that the shell surrounds the centre and gelling the shell.

33. A process as claimed in claim 32 wherein the components are introduced into starch moulds.

34. A process as claimed in claim 32 or 33 wherein the water-based shell composition in liquid form and the liquid centre are introduced into a mould using an apparatus which provides a co-axial deposit, initially depositing shell, then introducing a flow of filling co-axially with the shell material and finishing with just shell.